

DSMS Telecommunications Link
Design Handbook

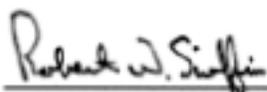
901, Rev. B
Handbook Glossary

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Change Log

Rev	Issue Date	Affected Paragraphs	Change Summary
-	11/30/2000	All	Initial Release
A	8/15/03	2	Corrected units of Boltzmann's constant and other typographical errors. Added abbreviations for new and revised modules.
B	10/7/04	2	Revised abbreviation list for new and revised modules.

Note to Readers

There are two sets of document histories in the 810-005 document, and these histories are reflected in the header at the top of the page. First, the entire document is periodically released as a revision when major changes affect a majority of the modules. For example, this module is part of 810-005, Revision E. Second, the individual modules also change, starting as an initial issue that has no revision letter. When a module is changed, a change letter is appended to the module number on the second line of the header and a summary of the changes is entered in the module's change log.

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1 Introduction

1.1 Purpose

The purpose of this document is to present a useful glossary of commonly used terms, abbreviations, and acronyms that are current and applicable to the Deep Space Network (DSN) and the Interplanetary Networks Directorate (IPN) of the Jet Propulsion Laboratory.

1.2 Scope

This scope of this document is limited to providing terms, abbreviations, and acronyms that are used within Document 810-005 and especially those that may be different from usage in other organizations.

Terms, abbreviations, and acronyms are included in this document if they meet any of the following criteria:

- used within the DSN or IPN but with a meaning that may be unique to the DSN or IPN,
- used within 810-005 in place of equivalent terms, abbreviations, and acronyms that may be used elsewhere, or
- commonly used in the field of telecommunications engineering but not necessarily known to all users of 810-005.

1.3 *Revisions*

This glossary will be periodically revised with changes, improvements, or additions. Usually, these revisions will be coincident with the publication of new or revised 810-005 modules that contain new or revised terminology.

1.4 *Definitions*

The following paragraphs define the types of items that appear in this glossary and give general rules for their formation.

1.4.1 *Terms*

A *term* is any word or expression that has a precise meaning in a particular field, in this case, telecommunications engineering.

1.4.2 *Abbreviations*

An *abbreviation* is a shortened or contracted form of a word or phrase. In a strict sense, the letters are individually pronounced (for example, rpm or DSN) or the reader might visualize and pronounce the complete form of the word (for example, "assembly" for "assy" or "telemetry" for "TLM").

1.4.3 *Acronyms*

An *acronym* is a pronounceable abbreviation formed by one of two methods: (1) combining the first syllables of the key words (for example, Caltech or FORTRAN) or (2) combining the first letter and other letters, as required, from the name or key words of an organization, project, or piece of equipment (for example, AMMOS or LAN).

1.5 *Controlling Documents*

The terms, abbreviations, and acronyms contained in this document are intended to be consistent with those defined in JPL internal publication, DSMS Requirements and Design – DSMS Terms and Abbreviations; DSMS Document 820-062 which serves as the controlling document for this module

2 *Abbreviations and Terms*

<i>Abbreviation or Term</i>	<i>Definition</i>
<i>A</i>	
A-D	analog-to-digital
A/S	anti-spoofing mode of operation (Global Positioning System) in which the encrypted, or Y-code, is unavailable to civilian users of the system
AFC	automatic frequency control
AFS	atomic frequency standard
AGC	automatic gain control
alidade	The rotating but non-tilting portion of the DSN azimuth-elevation antennas.
AM	amplitude modulation
AMP	amplifier
AMMOS	Advanced Multi-mission Operations System
ARC	ambiguity resolving code
ASM	attached synchronization marker
atm	atmospheric
az or AZ	azimuth
AZ-EL	azimuth-elevation
<i>B</i>	
B2MCD	Block II Maximum Likelihood Convolutional Decoder
B3MCD	Block III Maximum Likelihood Convolutional Decoder
B/W or BW	bandwidth
BCH	Bose-Chaudhuri-Hocquenghem (code)
BER	bit error rate
BET	Bit Error Tolerance
Boltzmann's constant	-198.6 dBm/(Hz · K)
BPSK	binary phase shift keyed

***Abbreviation
or Term***

Definition

BVR Block V Receiver (part of DTT Subsystem)

BWG Beam Waveguide (antenna or subnet)

C

c speed of light, 299,792.458 km/s

Category A missions within 2 million km of Earth

Category B missions at distances greater than 2 million km from Earth

C/A Coarse Acquisition (GPS code)

CCSDS Consultative Committee for Space Data Systems

CCW counter-clockwise

CD cumulative distribution

CDSCC Canberra (Australia) Deep Space Communications Complex

CFDP CCSDS file Delivery Protocol

CLTU Command Link Transfer Unit

CMD Command

CONSCAN conical scanning

CRG Coherent Reference Generator

cryo cryogenic

CSO Cryogenic Sapphire Oscillator (frequency standard)

CSS Channel-Select Synthesizer

CTT Compatibility Test Trailer

CV connection vector

CW clockwise

D

D/C downconverter

D/L downlink

dB decibel(s)

dBc decibel(s) with respect to carrier

dB_i decibel(s) with respect to isotropic

dB_m decibel(s) with respect to one milliwatt

***Abbreviation
or Term***

Definition

DCC	Downlink Channel Controller
DCPC	Downlink Channel Processing Cabinet
DCT	Design Control Table
DDC	Digital Downconverter
dec or DEC	declination
deg	degree(s)
Δ DOR	Delta-Differential One-way Ranging
DIG	digitizer (assembly)
DLT	digital linear tape
DMD	DSS Media Calibration (subsystem) or Data Monitor and Display (assembly)
DN, dn	down
DOR	differential one-way range
DRVID	differenced range versus integrated Doppler
DSCC	Deep Space Communications Complex
DSN	Deep Space Network
DSMS	Deep Space Mission System
DSS	Deep Space Station
DSS-13	34-m research & development antenna at Goldstone DSCC
DSS-14	70-m antenna at Goldstone DSCC
DSS-15	34-m HEF antenna at Goldstone DSCC
DSS-16	26-m antenna at Goldstone DSCC
DSS-23	11-m antenna at Goldstone DSCC
DSS-24	34-m BWG antenna at Goldstone DSCC
DSS-25	34-m BWG antenna at Goldstone DSCC
DSS-26	34-m BWG antenna at Goldstone DSCC
DSS-27	34-m HSB antenna at Goldstone DSCC
DSS-33	11-m antenna at Canberra DSCC
DSS-34	34-m BWG antenna at Canberra DSCC
DSS-43	70-m 0antenna at Canberra DSCC
DSS-45	34-m HEF antenna at Canberra DSCC

***Abbreviation
or Term***

Definition

DSS-46	26-m antenna at Canberra DSCC
DSS-53	11-m antenna at Madrid DSCC
DSS-54	34-m BWG antenna at Madrid DSCC
DSS-55	34-m BWG antenna at Madrid DSCC
DSS-63	70-m antenna at Madrid DSCC
DSS-65	34-m HEF antenna at Madrid DSCC
DSS-66	26-m antenna at Madrid DSCC
DTF	Development and Test Facility
DTK	DSS Tracking (Subsystem)
DTT	Downlink Tracking and Telemetry (Subsystem)

E

EEIS	End-to-End Information System
EIRP	effective isotropic radiated power
el, EL, elev	elevation
EOP	Earth Orientation Parameters (of the International Earth Rotation Service [IERS])

F

F/O	fiber optic
FCD	Feedback concatenated decoding
FER	frame error rate
FET	field effect transistor
FFT	fast Fourier transform
FM	frequency modulation
FODA	Fiber-optics Distribution Assembly
FOM	figure of merit
FSTL	Frequency Standards Test Laboratory (at JPL)
FTP, ftp	file transfer protocol
FTS	Frequency and Timing Subsystem

***Abbreviation
or Term***

Definition

G

G/T	(antenna) gain divided by (operating system) temperature
GCF	Ground Communications Facility
GDS	Ground Data System
GDSCC	Goldstone (California) Deep Space Communications Complex
GMSK	Gaussian minimum-shift keying
GPS	Global Positioning System
GRA	GPS Receiver/Processor Assembly
GSFC	Goddard Spaceflight Center
GSSR	Goldstone Solar System Radar
GSTDN	Ground Spaceflight Tracking and Data Network

H

H/P	high power
HA	hour angle
HEF	high efficiency (antenna)
HEMT	high electron-mobility (field-effect) transistor
HPBW	half-power beamwidth
HRM	high-rate (radio loss) model
HSB	high (angular-tracking) speed beam waveguide (antenna)

I

I/F	interface
ID	identifier or identification
IDC	IF-to-Digital Converter
IERS	International Earth Rotation Service
IF	intermediate frequency
IIRV	Improved Inter-range Vector
INP	Internet Predicts
IPN	Interplanetary Networks (JPL Directorate)

***Abbreviation
or Term***

Definition

ITRF IERS Terrestrial Reference Frame
ITU International Telecommunications Union

J-K

JPL Jet Propulsion Laboratory
KSC Kennedy Space Center

L

L/P low power
LCP left (-hand) circular polarization
LITS/VCXO Linear Ion-trap/Voltage Controlled Crystal Oscillator
(frequency standard)
LNA low noise amplifier
LO local oscillator
LRM low-rate (radio loss) model

M

MAP maximum *a posteriori* probability
MASER microwave amplification by stimulated emission of radiation
max maximum
MB medium bandwidth
MCD Maximum Likelihood Convolutional Decoder
MDA Metric Data Assembly
MDSCC Madrid (Spain) Deep Space Communications Complex
ME Master Equatorial
MFR Multi-function Receiver
MGC manual gain control
MILA Merritt Island Launch Area
min minimum
MOC Mission Operations Center
MOCC Mission Operations Control Center

***Abbreviation
or Term***

Definition

mod	modulation, module
MOS	Mission Operations System
MRE	mean radial error
MRT	major range tone
MSL	mean sea level
MSPA	multiple spacecraft per antenna
<i>N</i>	
NA, N/A	not applicable
NASA	National Aeronautics and Space Administration
NAV	Navigation (Subsystem)
NB	narrowband, narrow bandwidth
NCO	numerically controlled oscillator
NISN	NASA Integrated Service Network
NIST	National Institute of Standards and Technology
NMC	Network Monitor and Control (Subsystem)
NOAA	National Oceanic and Atmospheric Administration
NOCC	Network Operations Control Center
NRZ	non-return to zero
NRZ-L	non-return to zero, level
NRZ-M	non-return to zero, mark
NRZ-S	non-return to zero, space
NSP	Network Simplification Project
NSS	Network Support Subsystem
NTIA	National Telecommunications and Information Administration
NTK	NOCC Tracking (Subsystem)
NTP	Network Time Protocol
<i>O</i>	
OD	Operator Directive
OQPSK	offset quadrature phase-shift keyed

***Abbreviation
or Term***

Definition

ORT	Operational Readiness Test
OVLBI	Orbiting Very-long Baseline Interferometry
OVT	Operational Verification Test

P

P/O	part of
PCG	Phase Calibration Generator (part of FTS)
PCM	pulse-code modulation
PDF	probability density function portable document format (type or extension of computer file)
PDRVID	pseudo-DRVID
PLL	phase-locked loop
PM	phase modulation
PN	pseudo-random noise
POCC	Project Operations Control Center
PSK	phase-shift keyed
PTS	Precision Telemetry Simulator

Q

QPSK	quadrature phase-shift keying
QQCL	quantity, quality, continuity, and latency

R

R/T	real-time, room temperature
RA	right ascension
RCP	right circular polarization
rev	revision
RF	radio frequency
RH	relative humidity
RID	RF-to-IF Downconverter
RMDC	Radio-Metric Data Conditioner

***Abbreviation
or Term***

Definition

RMS; rms	root-mean-square
RNG	range
RNS	Reliable Network Service
RRP	Receiver and Ranging Processor
RS	Reed-Solomon (code), radio science
RSR	Radio Science Receiver
rss, RSS	root-sum-square
RTLTL	round-trip light time
RU	range unit
<i>S</i>	
S/C	spacecraft
S/N	Signal-to-Noise
SBE	S-band Exciter (26-m subnet assembly)
SCA	Subsystem Control and Monitor Assembly
SEP	Sun-Earth-Probe (angle)
SFODA	Stabilized Fiber-optic Distribution Assembly
SFU	solar flux units (one SFU = 1×10^{-22} W/m ² /Hz)
SLE	Space Link Extension
SNR	signal-to-noise ratio
SPC	Signal Processing Center
SPD	S-Band Polarization Diplexed (feedcone)
SPT	System Performance Test or System Performance Test Assembly
SRA	Sequential Ranging Assembly
stowed	With respect to an antenna, aimed near zenith for protection from the wind.
sub, subcarr	subcarrier
SYM	symbol
SYS	system

***Abbreviation
or Term***

Definition

T

TBD	to be determined
TCP	Telemetry and Command Processor
TCT	Time Code Translator
TDA	Tracking and Data Acquisition (former JPL Directorate)
TDDS	Tracking and Data Delivery System
TDS	Telemetry Delivery Subsystem
TEC	total electron content
TIS	Telemetry Input Subsystem
TLM	telemetry, Telemetry Service
TLP	Telemetry Processor
TMOD	Tracking and Mission Operations Directorate (JPL)
T _{OP}	T sub OP (operating system temperature)
TSA	Telemetry Simulation Assembly
TXR	transmitter or Transmitter Subsystem

U

U/C	upconverter
U/L	uplink
ULNA	ultra low-noise amplifier
UPA	Uplink Processor Assembly
UPL	Uplink (Subsystem)
URA	Uplink Ranging Assembly
USO	Ultra-Stable Oscillator
UTC	Universal Time, Coordinated

V

VAC	vacuum
VCO	voltage controlled oscillator

<i>Abbreviation or Term</i>	<i>Definition</i>
VCXO	voltage-controlled crystal oscillator
VLBI	very-long baseline interferometry
VSR	VLBI Science Receiver
 <i>W</i>	
W/B, WB	wideband
WD	waveform distortion
 <i>X</i>	
X-EL, XEL	cross-elevation
XMIT	transmit
XRO	X-band receive only (feedcone)
XTR	X-band transmit-receive (feedcone)
 <i>Y</i>	
yr	year
 <i>Z</i>	
ZDD	Zero-delay Device
ZEN	zenith